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This letter summarizes our last visit to the Outlet Fire Burn area on the North Rim of Grand Canyon National Park. The main objectives of this visit were to: Survey the entire length of Point Imperial Trail affected by the fire; evaluate trees marked for removal along Fuller Canyon Road; and drive the road to Cape Royal to view areas affected by the fire.

Point Imperial Trail

Nearly 90% of the forest along the Point Imperial Trail appeared to be totally consumed by the Outlet fire. There were a few places where the trail became so obscure it was difficult to follow due to various aspects of the fire including blackened soil and aspen sprout encroachment. There are various size classes of snags along the trail. The smaller diameter snags, 10 inches to 12 inches in diameter at breast height (dbh), and tops of larger ones are expected to start breaking off at ground level or up to 30 or more feet above the ground within the next few years. The largest diameter snags may take 5 years or more to break off and some of them will remain standing for decades, especially if their tops drop off first. We know the risk of snags falling on the trail is high but there is a need to determine the risk of injury to park visitors (i.e. amount of traffic on this trail) to aide managers in selecting an appropriate action for managing tree hazards along this trail.

Fuller Canyon Road

Our task was to evaluate the snags that had been marked for hazard tree removal along Fuller Canyon Road. The main area we evaluated was the severely burned section near the second picnic area. The prescription had called for flagging snags for removal that were greater than 12” dbh that could fall on the road. During our survey we found many trees **less** than 12” dbh and located immediately adjacent to the road were also flagged for removal. This departure from the prescription was welcomed since these trees would also cause severe harm to people and their property when they fail. We also found many trees both greater than 12” dbh and less than 12” dbh, which were **not** marked for removal that would pose a threat to people and their property when they fail. You tallied these differences. This was especially true on the north side of Fuller Canyon Road where many trees were killed by the Outlet fire.

Cape Royal Road

We observed areas along this road that were burned by the fire, approximating the distance to each of these burned areas along the road. We also recorded the approximate number of hazard trees created by the fire that would affect public safety along the road. We made a stop at the Vista Encantada Picnic area and noted that the Park could put in a Dwarf Mistletoe Suppression Proposal to prune dwarf mistletoe witches' brooms from the large ponderosa pines in the area to increase their life expectancy.

As mentioned in a previous letter to Jerome Montegue, it is difficult to predict exactly when a dead tree will fail. The main factors influencing deterioration rates are tree size, tree species, and the environment. The important fact is that all dead trees eventually fail and removal should take place when it is still safe for the sawyer. The following two scientific papers on the deterioration of fire-killed trees are being mailed to you: 1) Kimmey, James W. 1955. Rate of deterioration of fire-killed timber in California. Circular 962. Washington, DC: U.S. Department of Agriculture. 22 p.; and 2) Lowell, Eini C.; Willits, Susan A.; Krahmer, Robert L. 1992. Deterioration of fire-killed and fire-damaged timber in the Western United States. Gen. Tech. Rep. PNW_GTR-292. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 27 p.

Jane Taylor, a Pathologist in Montana, gave me the following names of people who have dealt with hazard trees in Yellowstone National Park and who probably handled the snags along roadways after the fire of 1988: Craig McClure ((307)344-2168 and Roy Renkin ((307)344-2161.

Feel free to call with any questions you have about this letter or when you need further assistance.

/s/Mary Lou Fairweather

Mary Lou Fairweather
Plant Pathologist